

MCR3U Chapter 2 Test

K	/17	T	/6	C	/8	A	/13	Total	/44
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Name: Answers

Date: _____

/2
K

1. Determine the equation of the inverse, $f^{-1}(x)$, of the function $f(x) = \frac{9}{5}(x+32)$

$$x = \frac{9}{5}(y+32)$$

$$f^{-1}(x) = \frac{5}{9}x - 32$$

/3
K

2. Determine the equation of the inverse, $m^{-1}(x)$, of the function $m(x) = 2x^2 - 4x - 6$

$$V: x = \frac{4}{2(2)} = 1$$

$$y = 2(1)^2 - 4(1) - 6 = -8$$

$$\therefore V(1, -8)$$

$$m(x) = 2(x-1)^2 - 8$$

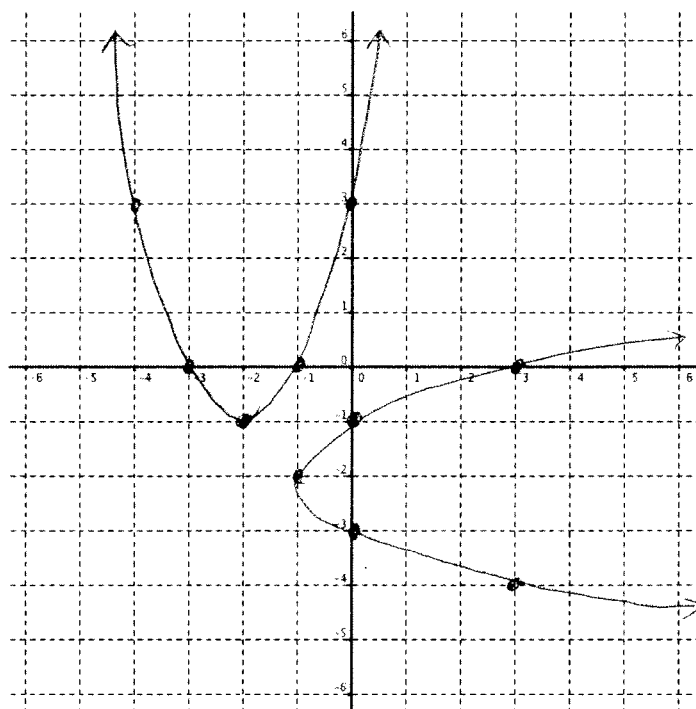
$$x = 2(y-1)^2 - 8$$

$$\frac{x+8}{2} = (y-1)^2$$

$$m^{-1}(x) = \pm \sqrt{\frac{x+8}{2}} + 1$$

/3
A

3. Give the graph of the inverse, $g^{-1}(x)$ of the function $g(x) = (x+2)^2 - 1$



/4
A

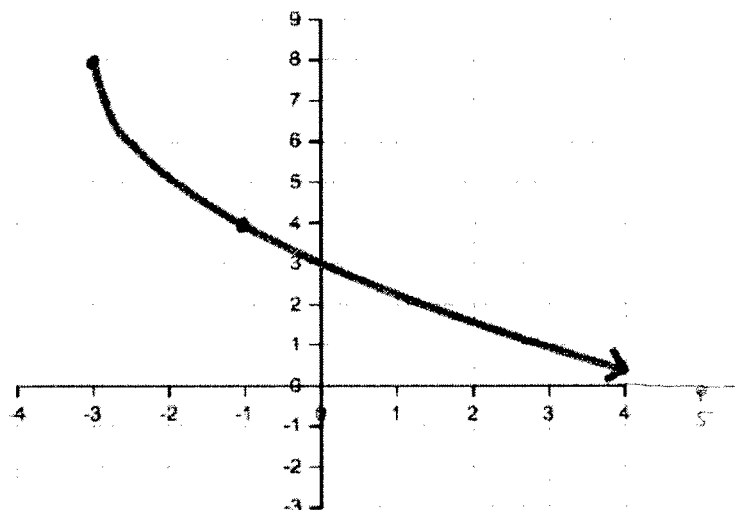
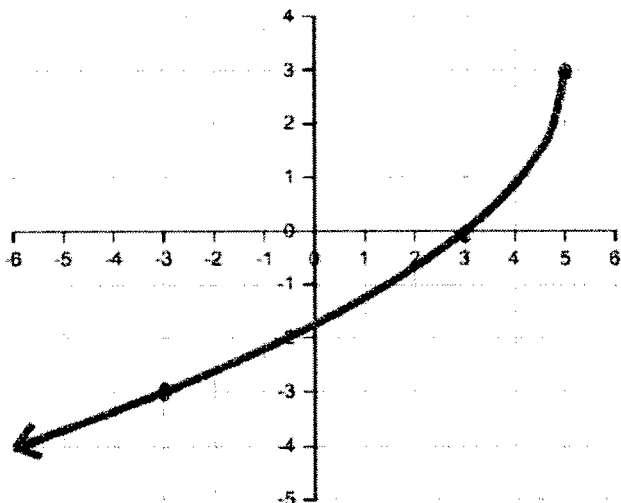
4. Determine equations for the functions shown in the graphs below.

a) down 3
left 2, 6
 $V(5, 3)$

$$y = -3\sqrt{\frac{x-5}{2}} + 3$$

b) down 4
right 2, 6,
 $V(-3, 8)$

$$y = -4\sqrt{\frac{x+3}{2}} + 8$$



/4
C

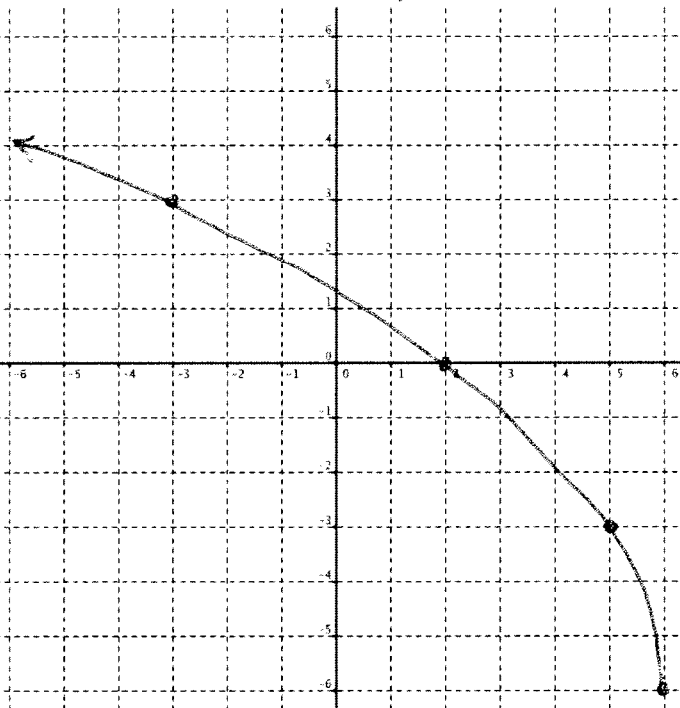
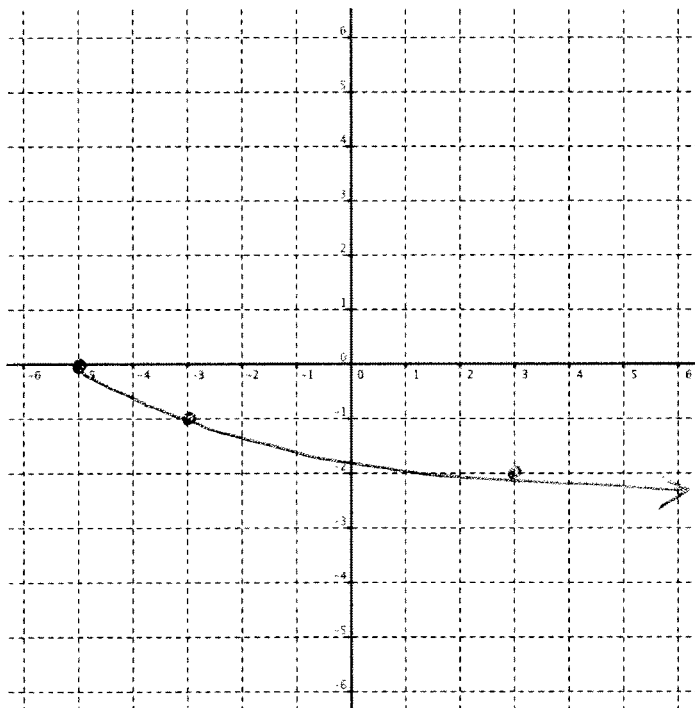
5. Graph each of the following functions. Mark all points in the domain and range of the grids provided.

$$f(x) = -\sqrt{\frac{1}{2}(x+5)}$$

down 1
right 2, 6, 10
 $V(-5, 0)$

$$f(x) = 3\sqrt{6-x} - 6$$

up 3
left 1, 3, 5
 $V(6, -6)$



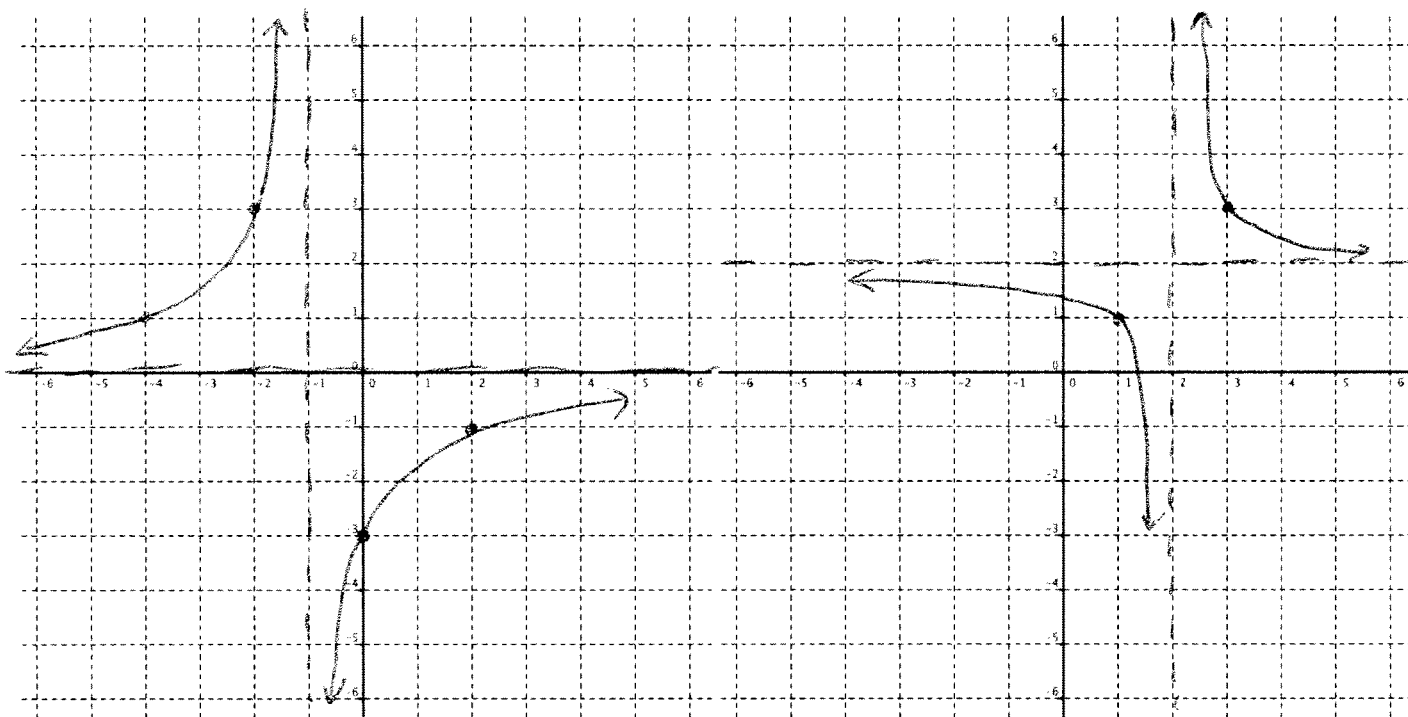
/1
T

/4
C

6. Graph each of the following functions accurately on the grids provided.

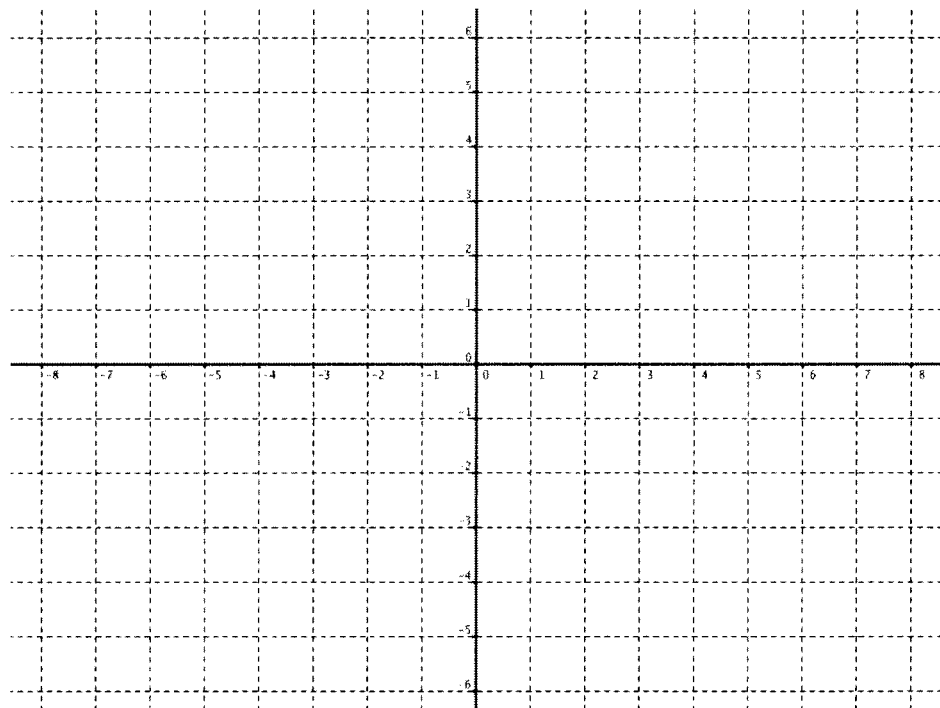
$$f(x) = \frac{-3}{x+1}$$

$$f(x) = 2 - \frac{1}{2-x} = 2 + \frac{1}{x-2}$$



/3
T

7. Graph the reciprocal of the linear function $y = 2x - 2$



/4
K

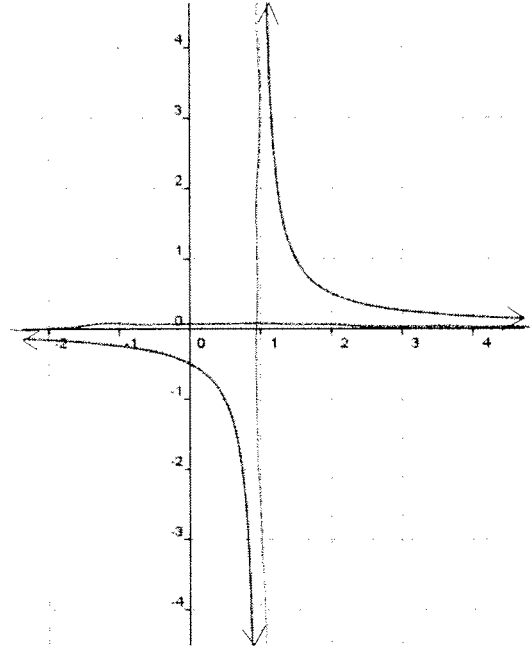
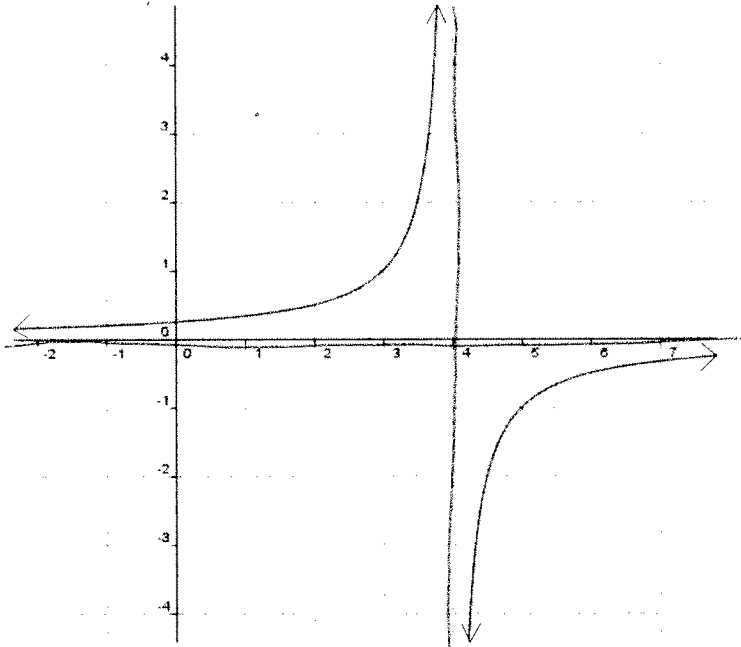
8. Determine equations for the functions shown in the graphs below.

a)

$$y = \frac{-1}{x-4}$$

b)

$$y = \frac{1}{2(x-1)}$$



/6
A

9. Simplify the following functions and state restrictions.

$$\begin{aligned} \text{a) } f(x) &= \frac{2x-6}{x^2-6x+9} \\ &= \frac{2(x-3)}{(x-3)(x-3)} \\ &= \frac{2}{x-3} \end{aligned}$$

$$x \neq 3$$

$$\begin{aligned} \text{b) } f(x) &= \frac{2x^2-5x-12}{x+3} \\ &= \frac{(2x+3)(x-4)}{(x+3)} \end{aligned}$$

$$x \neq -3$$

$$\begin{aligned} &2x^2-5x-12 \\ &2x^2-8x+3x-12 \\ &2x(x-4)+3(x-4) \\ &(2x+3)(x-4) \end{aligned}$$

10. Simplify the following rational expressions. State all restrictions.

a) $f(x) = \frac{x+3}{x^2-4x-21} \div \frac{x}{x-7}$ [dividing]

$$\frac{x+3}{(x+3)(x-7)} \times \frac{x-7}{x}$$

$$\frac{1}{x}$$

$$x \neq -3, 7, 0$$

b) $f(x) = \frac{x}{x+2} - \frac{2}{x}$

$$= \frac{x^2}{(x+2)x} - \frac{2(x+2)}{x(x+2)}$$

$$= \frac{x^2 - 2x - 4}{x(x+2)}$$

$$x \neq 0, -2$$

